## REMARKS

Previously, the Examiner required restriction of the invention(s) in the instant application to: Group I claims 1-12 and 46-51, or Group II claims 13-45 and 52-54. Applicants provisionally elected Group II claims 13-45 and 52-54.

The elected claims 13-45 and 52-54 have now been rejected under various grounds. Claims 13-17, 19, 21-24, 26, 33, 40 and 42 are rejected under 35USC 102(b) as being anticipated by Poon et al US 5,838,145. Claims 18, 20, 25, 27, 28-32, 41, 43-45 and 52-54 are rejected under 35USC 103(a) as being unpatentable over Poon et al (hereinafter Poon) in combination with Harman US 5,559,423.

Applicants note at the outset that there are fundamental differences in the structure, mode of operation, and the results achieved by their invention that are not contemplated by the currently cited patents to Poon and Harman. Regarding the cited references, applicants agree with Examiner that Poon is a primary reference and that Harman is cited supplementally for items clearly not covered by Poon. However, the fundamental distinctions that exist over the Poon teachings are also missing from Harman. For this reason, even if the two references were properly combinable (which they are not), the two references neither singly nor in combination teach applicants' invention.

By way of example, note that in FIG. 4 of Poon, fixed voltage references are provided at inputs 331 and 334 to amplifiers 309a and 309b respectively (see col. 2 lines 41-43). In other words, once variable resistor 324 has been suitably adjusted to define a tolerance band within which the output voltage is allowed to fluctuate, (see col. 2 lines 43-50) then it is deviations from this fixed voltage that activate a transient response by turning on one of output transistors 306a and 306b. (see col.2 lines 53 to col.3 line2) The actual voltage value of the fixed voltage references are set by the value of the individual resistors in the resistive voltage divider connected in series between the fixed voltage value provided at terminal 315 and ground potential.

In contradistinction, applicants teach independent current sources 532 and 542 (FIG. 5) coupled to amplifiers 538 and 548 for providing fixed voltage levels at the base of transistors Q1 and Q3 respectively. The current conducted by Q1 or Q3 then is

based on changes in emitter voltage, i.e. deviations from the voltage at the load. Since the emitters of Q1 and Q3 are connected in common and to the load, this provides a transient response time of an emitter follower circuit that is typically faster than a transient response time dependent on the bandwidth of the operational amplifiers 538 and 548.

Accordingly, applicants' circuit is patentably distinct from the Poon circuit where the time delay for turning on either of the output transistors 306a and 306b depends on the operating bandwidth of amplifiers 309a and 309b (in addition to component circuit delays for example through the various illustrated resistors). This is due to the fact that output transistors 306a and 306b have a common collector connection (instead of a common emitter connection) coupled to the load. The voltage at the load which is the output of the switching regulator is resistively coupled as the second input to both operational amplifiers 309a and 309b. Thus, Poon did not recognize the benefits of either: 1. activating a transient response based on deviation from other than a fixed voltage or 2. providing a rapid transient response that is faster than the operating bandwidth of the operational amplifier. Since the Poon patent teachings fail at the point of novelty, they are inoperative to render the instant invention obvious by combination with another reference, such as Harman. The Harman circuits are interesting but fail not only in teaching applicants' invention, but also fail to suggest how combining the circuits of Harman with the circuits of Poon would achieve applicants' invention.

In order to more succinctly claim their invention, applicants have amended claim 13, as follows:

13. (Currently Amended) A power regulator for responding to transient power demands, comprising:

a negative transient response portion configured to respond to fast transient negative current events, the negative response portion comprising a sense circuit and a first reference current source, each coupled to an amplifier for controlling a first output device; and

a positive transient response portion configured to respond to fast transient positive current events, the positive response portion comprising a sense circuit and a second reference current source, each coupled to an amplifier for

controlling a second output device;

wherein the output devices respond to transient events faster than the operating bandwidth of the amplifier.

Note that even prior to the amendment, claim 13 recited: "a negative transient response portion configured to respond to fast transient negative current events, the negative response portion comprising a sense circuit and a first reference current source, each coupled to an amplifier for controlling a first output device". The underlined portions are intended to point out a specific claim distinction over the Examiner's comments. In the Office Action, Examiner noted: "a current source and the sense transistor (figure 4, item 315 and 306b), a bipolar transistor (figure 4, item 306a-b) positive and negative (column 6, line 15-60)." (see last 3 lines of paragraph 2) The problem with this rationale is that transistor 306b in figure 4 corresponds to an output device in applicants' structure and not to a sense transistor. Referring to applicants' FIG. 5, sense circuits 536 and 546 are in addition to and distinct from output devices Q1 and Q3. Thus, even if device 306b were interpreted as a sense transistor (which it is not), then it cannot also be an output device, as applicants' claim requires both.

In the same last three lines of paragraph 2 in the Office Action, Examiner refers to item 315 as a current source. This is incorrect as terminal 315 is a voltage source (see col. 5 lines 30-38). Current sources and voltage sources are known to be distinct in the art. Moreover, even if item 315 were to be considered a current source, it is only one source. In contradistinction, applicants' claim 13 recites first and second reference current sources.

In addition to the foregoing, applicants have amended the claim to also recite: "wherein the output devices respond to transient events faster than the operating bandwidth of the amplifier". This, of course, refers to the output devices, connected for example as illustrated in FIG. 5. This feature of applicants' invention is further described in newly added claim 55, which recites:

"The power regulator for responding to transient power demands of claim 13, wherein the output devices each comprise: at least one bipolar device or at least one metal oxide semiconductor device and are emitter or source coupled, thereby

responding to transient events faster than the operating bandwidth of the amplifier."

This recitation covers not only the embodiment of FIG. 5 (two bipolar transistors) but also FIG. 8 (two metal oxide semiconductor devices) and FIG. 7 (at least one bipolar device and metal semiconductor device). In the case of metal oxide semiconductor devices, the source electrodes are coupled to the output. As noted hereinabove, the features, i.e. structure and mode of operation recited in dependent claim 55 and independent claim 13 are patentably distinct from the cited prior art taken singly or in combination.

Claims 14-32 dependent in various degrees on claim 13 are believed to be allowable for the same reasons. Claim 16 has been amended to delete the feature now found in amended claim 13.

Original claim 33 has not been amended as the overall combination there recited appears to be patentable over the cited prior art. Specifically note the recitation in Claim 33 referring to: a first voltage regulator configured to supply power to a load and to respond to slow transient power demands, the first voltage regulator including a first voltage output, a second voltage output, and a ground output. (emphasis added) This covers applicants' embodiment as illustrated, for example, in FIG. 11. The switching regulator in Poon provides only one voltage output and a ground output but no second voltage output. Harman also fails to teach this feature.

Claims 34-45 dependent in various degrees on claim 33 are believed to be allowable for the same reasons and also as they recite additional features of the invention.

Original claim 52 has also not been amended as the overall combination there recited appears to be patentable over the cited prior art. To the extent understood, it is believed that the rejection of this claim is based on the mention of a transconductance stage in Harman. In particular, the mention of the amplifiers (e.g. OTA 54 in FIG. 2 and col. 4 lines 50-51 of Harman) being operational transconductance amplifiers fails to suggest the invention of applicants.

Note that other than mentioning the transconductance stage, Harman does not teach: a compensation capacitor coupled to the output of the transconductance stage of the amplifier and further coupled to ground. Moreover, the overall combination

combination. Dependent claims 53 and 54 are believed to be allowable for the same reasons as well as the added features recited therein.

An early Notice of Allowance is earnestly solicited.

The undersigned would welcome a telephone call at the telephone number(s) listed below if such would advance prosecution of this application. For the sake of completeness, a copy of a previously submitted change of address is enclosed herewith. It is hereby requested that all future communications be addressed to the undersigned as follows:

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